# *UNINTERRUPTIBLE POWER SUPPLY*

## - ON LINE RACK -

Modelli / Models / Modelle / Modèles / Modelos

***700 VA ÷ 3000 VA***

*Manuale d'uso / User's manual / Bedienungsanleitung / Manuel d'utilisateur / Manual de usuario*

This part of the manual contains precautions that must absolutely be followed as they relate to SAFETY.

## Installation

- Connect the UPS system only to an earthed shockproof socket outlet.
- The building wiring socket outlet (shockproof socket outlet) must be easily accessible and close to the UPS system.
- Please use only VDE-tested, CE-marked mains cable (e.g. the mains cable of your computer) to connect the UPS system to the building wiring socket outlet (shockproof socket outlet).
- Please use only VDE-tested, CE-marked power cables to connect the loads to the UPS system.
- When installing the equipment, it should ensure that the sum of the leakage current of the UPS and the connected consumer does not exceed 3.5mA.

## Operation

- This UPS is operated by laymen.
- Do not disconnect the mains cable on the UPS system or the building wiring socket outlet (shockproof socket outlet) during operations since this would cancel the protective earthing of the UPS system and of all connected loads.
- The UPS system features its own, internal current source (batteries). The UPS output sockets may be electrically live even if the UPS system is not connected to the building wiring socket outlet.
- In order to fully disconnect the UPS system, first press the OFF-switch then disconnect the mains.

## Maintenance, servicing and faults

- The UPS system operates with hazardous voltages. Repairs may be carried out only by qualified maintenance personnel.
- **Caution** - risk of electric shock. Even after the unit is disconnected from the mains power supply (building wiring socket outlet), components inside the UPS system are still connected to the battery and are still electrically live and dangerous. Before carrying out any kind of servicing and/or maintenance, disconnect the batteries and verify that no current is present.
- Only persons adequately familiar with batteries and with the required precautionary measures may exchange batteries and supervise operations. Unauthorised persons must be kept well away from the batteries.
- **Caution** -Batteries may cause electric shock and have a high short-circuit current. Please take the precautionary measures specified below and any other measures necessary when working with batteries:
  - remove wristwatches, rings and other metal objects
  - use only tools with insulated grips and handles.
- When changing batteries, install the same number and same type of batteries.
- Do not dispose of batteries in a fire. The batteries may explode.
- Do not open or mutilate batteries. Released electrolyte is harmful to the skin and eyes. It may be toxic.
- Do not dismantle the UPS system.

**GB** — ***USER'S MANUAL*** — **GB**

# INTRODUCTION

Thanks you for choosing our product.

Our manufacturer are renowned specialists in the development and production of uninterruptible power supplies (UPS). The UPS in this range are high quality products, designed and built with care in order to give you the best performance.

This equipment can be installed by anyone, subject to **CAREFULLY AND THOROUGHLY READING THIS MANUAL.**

The manual contains detailed instructions on how to use and install the UPS.
**For information on using and getting the best performance from your UPS, this manual should be kept safely in the vicinity of the UPS and CONSULTED BEFORE TAKING ANY ACTION ON THE UPS.**

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For the purpose of improving it, the manufacturer reserves the right to modify the product described herein at any time and without notice.

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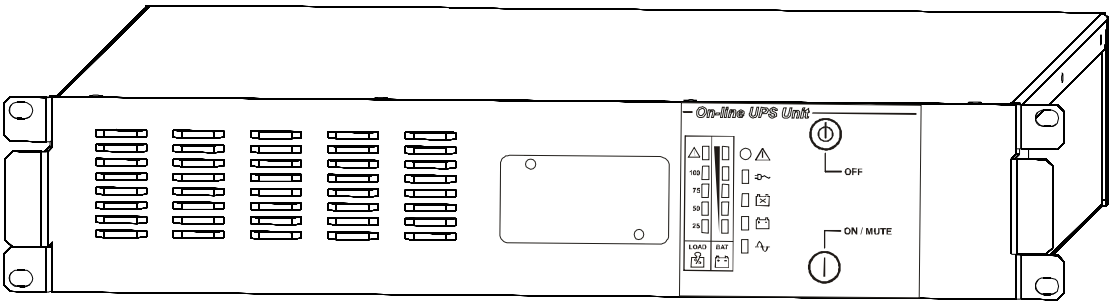
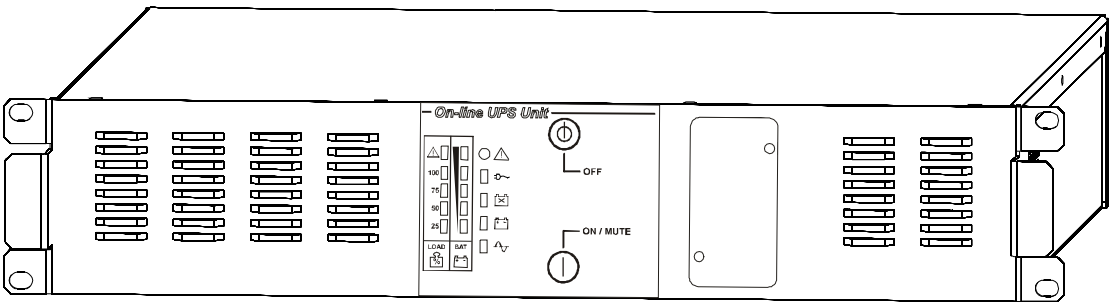
# PRESENTATION

This new family of UPS has been designed to offer versatility and reliability.
They use ON LINE technology, which means that the AC power for the load is converted to DC and then back to AC again to ensure a perfectly sinusoidal output, the frequency and voltage of which are established by microprocessor digital control and are independent of the input power source. This family of UPS has an automatic by-pass device that switches the load to mains power in the event of overvoltages or any other power problems to guarantee continuous power supply even in critical conditions.
This family of UPS is available in two versions:

- **Standard**: provided with batteries inside the UPS or in a separate unit (BATTERY BOX) included in the packaging.
- **XL**:without batteries inside, but including a powerful batterycharger (max 8A). This series must be combined with an external battery box, so it is indicated for long autonomy time.

The figures below show the various product versions:



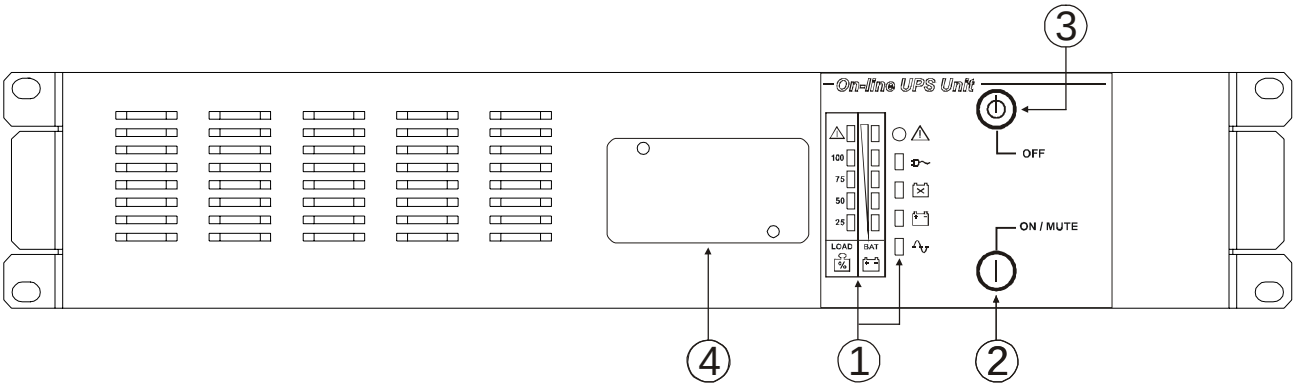

| | *700VA* | *1000VA / 1000VA XL* | *1500VA* | *2200VA / 2200VA XL* | *3000VA / 3000VA XL* |
|---|---|---|---|---|---|
| Nominal power [VA] | 700 | 1000 | 1500 | 2200 | 3000 |
| Output nominal voltage [Vac] | 220 / 230 / 240 | | | | |
| Dimensions W x D x H [1] [mm] | 483x390x88 | 483x390x88 | 483x480x88 | 483x480x176 / 483x480x88 | 483x480x176 / 483x480x88 |
| Weight [Kg] | 13 | 16 / 9 | 21 | 38 / 13 | 39 / 14 |

[1] *Note: 88mm = 2U; 176mm = 4U (2U + 2U); 483mm = 19”*

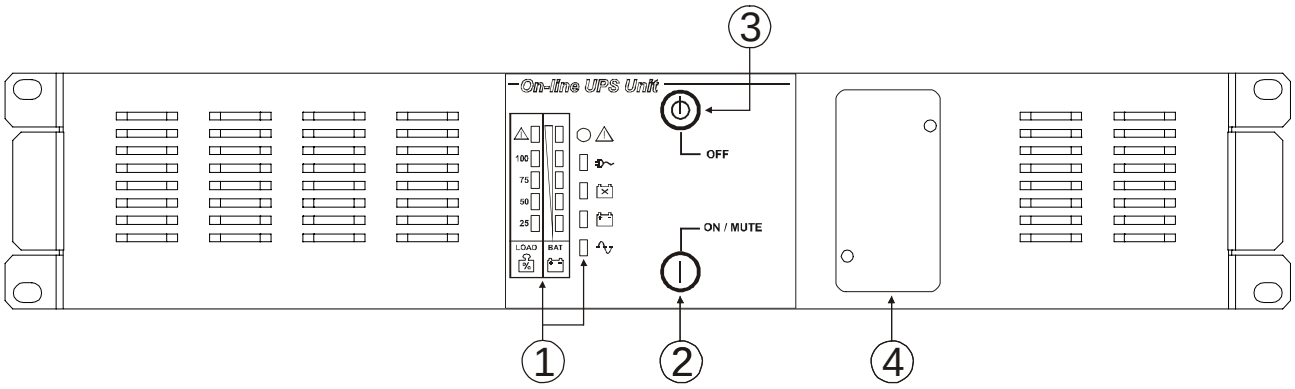
# VIEW OF THE UPS

## Front Views

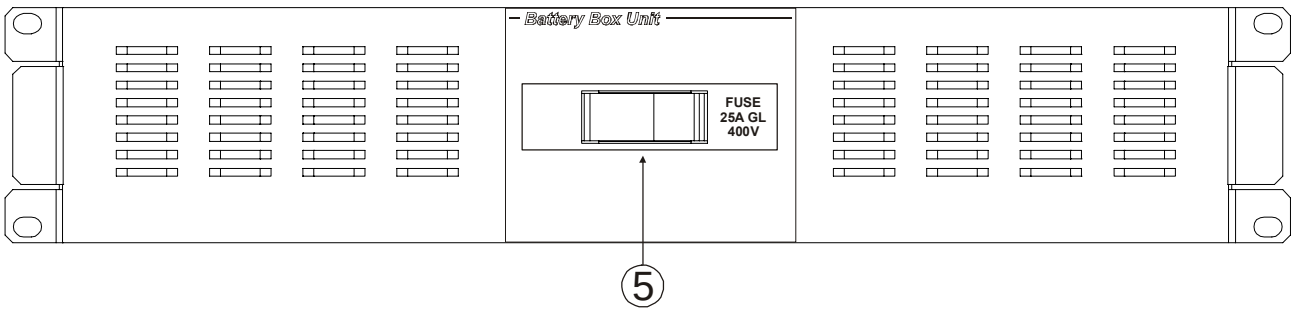
***700VA / 1000VA / 1000VA XL / 1500VA***




***2200VA / 2200VA XL / 3000VA / 3000VA XL***



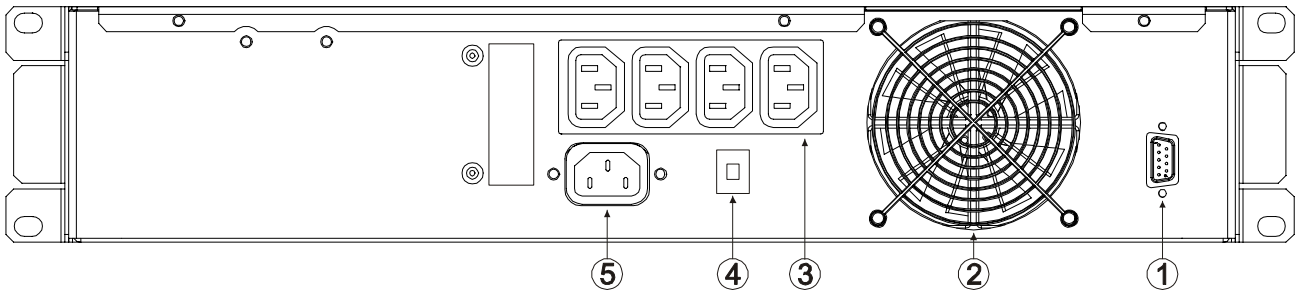

***BATTERY BOX (included in 2200VA / 3000VA models)***



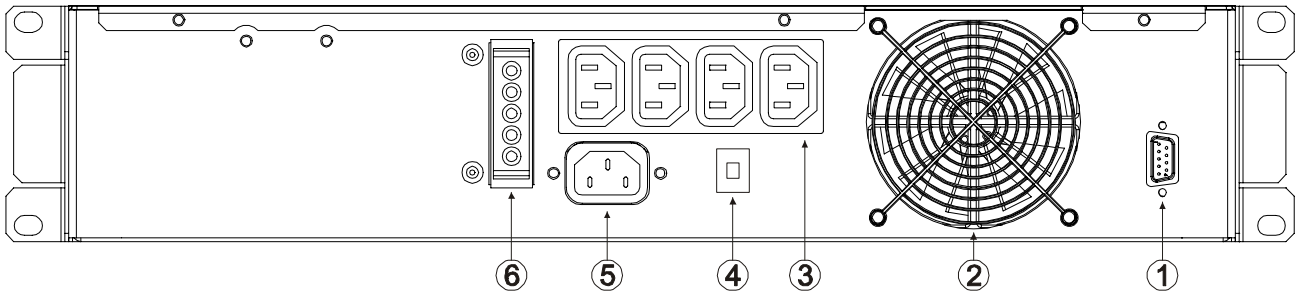

1. LED indicator panel
2. ON button
3. OFF button
4. Communication slot
5. Fuse-holder disconnecting switch

## Rear Views

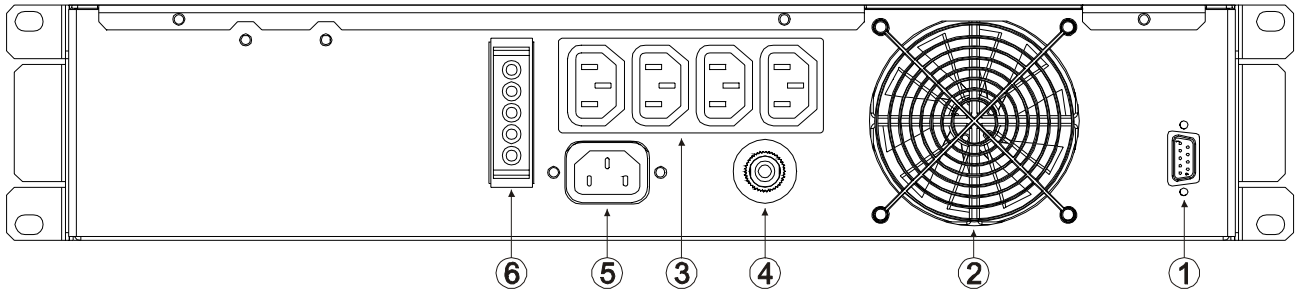
**700VA**



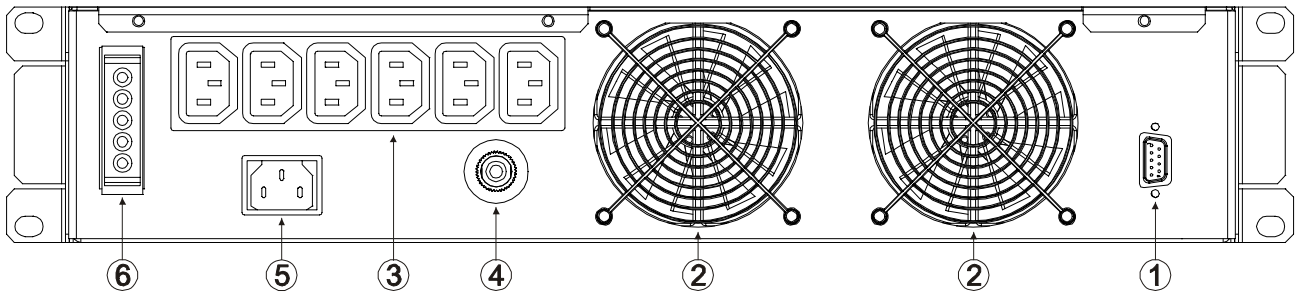

**1000VA / 1000VA XL**



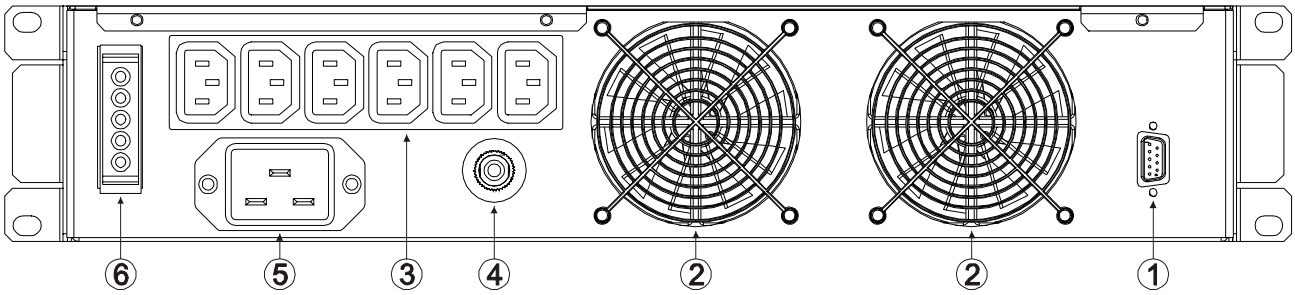

**1500VA**



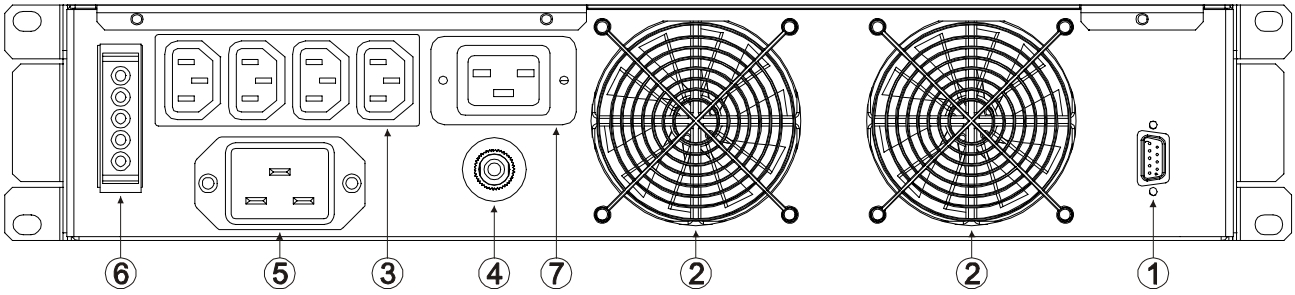

**2200VA**



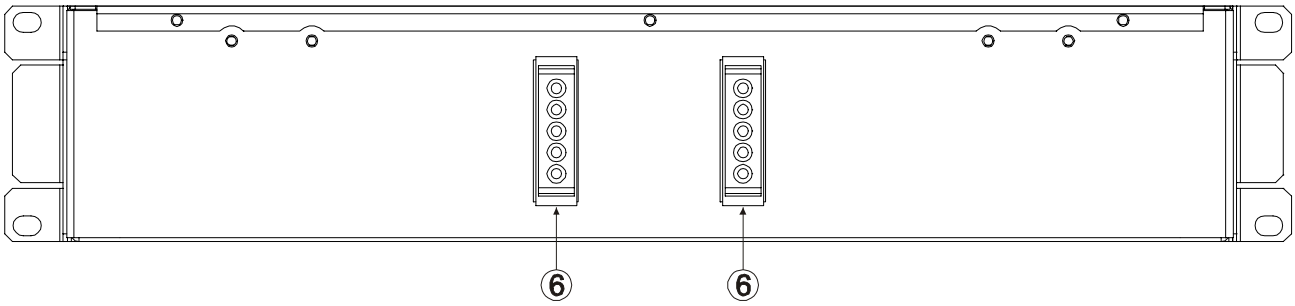
**2200VA XL**




**3000VA / 3000VA XL**

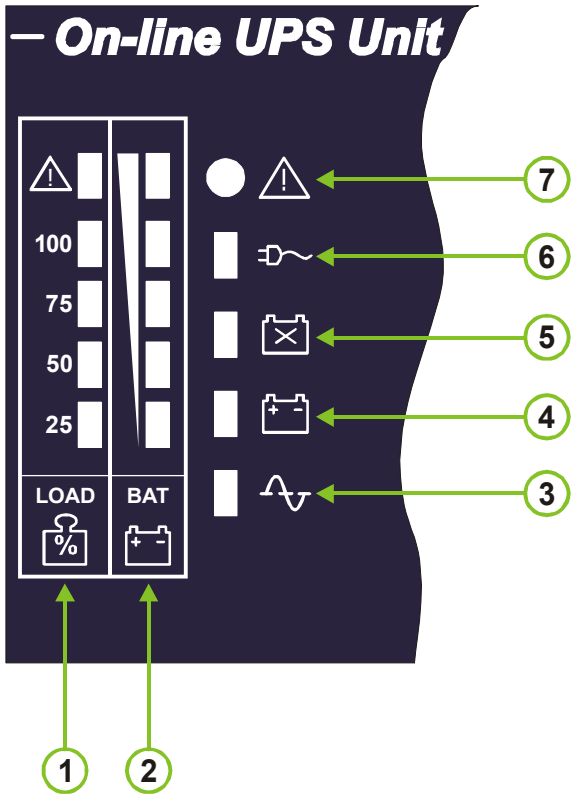



**BATTERY BOX**




1. RS232 serial communication port
2. Cooling fan
3. IEC output sockets (max 10A)
4. Input thermal protection
5. IEC mains input plug
6. Battery expansion socket
7. IEC 16A output socket

## VIEW OF LED INDICATOR PANEL




① Load level indicator

② Battery level indicator

③ Mains mode indicator

④ Battery mode indicator / Battery low indicator

⑤ Battery failure indicator

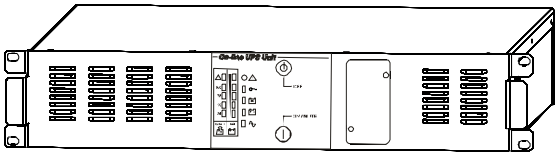
⑥ Load powered by bypass indicator

⑦ “Fault/Stand-by” indicator

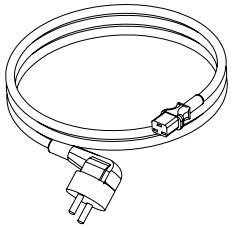
## OPENING THE PACKAGING AND CHECKING THE CONTENTS

The first thing to do after opening the packaging is to check the contents
The packaging should contain the following:

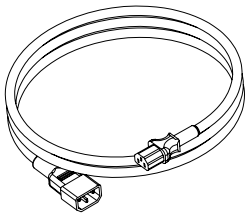
- UPS



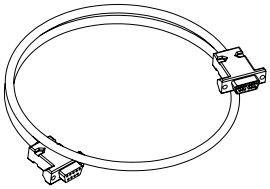
- IEC 10A (or 16A) power supply cable



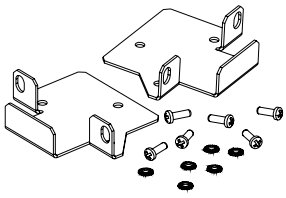
- 2 IEC-IEC 10A connection cables



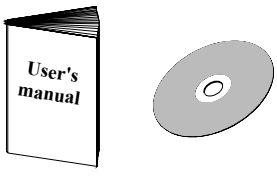
- RS232 serial cable



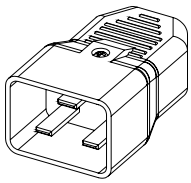
- handles



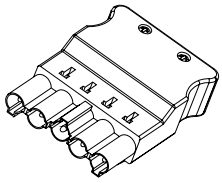
- CD-ROM software + User manual




- IEC 16A loose plug
(only for 3000VA / 3000VA XL)

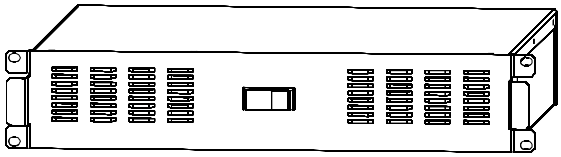


- Battery expansion connector
(only for XL models)

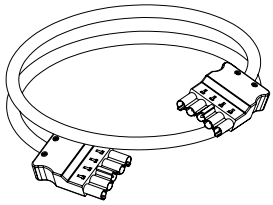


***ONLY FOR 2200VA / 3000VA:***

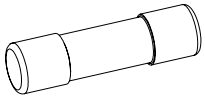
- BATTERY BOX



- Battery expansion cable



- Fuse (25A GL)



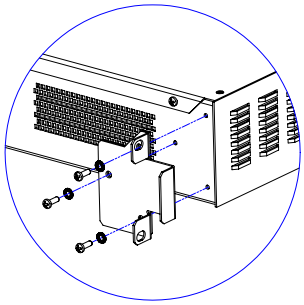
# INSTALLATION AND USE

This chapter describes the operations to be carried out to prepare the UPS.
***WARNING: the instructions below should be followed scrupulously for your personal safety and that of the product.***

**BEFORE CARRYING OUT THE FOLLOWING SEQUENCE OF OPERATIONS, MAKE SURE THAT THE UPS IS COMPLETELY SWITCHED OFF AND IS NOT CONNECTED TO THE MAINS OR TO ANY LOAD.**

## INSTALLATION OF HANDLES

Fasten the handles provided to the sides of the UPS with the appropriate screws, as shown in the figure at the side.



NOTE: The UPS is compatible for mounting in standard rack cabinets. Support brackets (guides with L-shaped support) must be used during installation due to the weight of the UPS.

## CONNECTIONS AND FIRST START-UP

1) In models that require/include the BATTERY BOX: first connect the UPS battery expansion plug to one of the two BATTERY BOX battery expansion sockets with the cable provided.
   *Note: The BATTERY BOX has two expansion sockets for the connection of several (BATTERY BOX) units in parallel.*
2) Connect the power supply cable to the IEC input plug.
3) Connect the UPS power supply cable to the mains.
4) After a few moments the UPS will be activated, a beep will be emitted and the "Fault/Stand-by" LED will light. The UPS is now in the stand-by state: this means that the UPS is in a minimum consumption condition. The microcontroller is powered and carries out supervision tasks and autodiagnostics; the batteries are charging; the outputs are disconnected; the cooling fans are operating; everything is ready for the UPS to be started up.
5) Connect the appliance(s) to be powered to the sockets located at the back of the UPS using the IEC-IEC cables provided or a cable of max. 10 metres in length.
   WARNING: do not connect appliances that absorb more than 10A to the IEC 10A sockets. The IEC 16A socket should be used exclusively for appliances exceeding this value, on those models where it is present.

## SWITCHING ON FROM MAINS POWER

1) Press the ON button for at least one second (until a beep sounds). Once it is released, all the LEDs come on for 1 second and a beep sounds. The UPS then runs a short test on the battery voltage and mains power status. In normal conditions, after this test, only the "mains" LED, load level and battery level indicators stay lit (if different lights or audio signals appear/occur, consult the table in the "Alarms and Indicator" Chapter for further details).
2) Switch on the loads connected to the UPS.

   ***Only for first start-up:*** check that the UPS is operating correctly after a few minutes:

   1. Simulating a black-out by removing the mains power cable
   2. The load must continue to receive power, the "battery mode" indicator should light up and the UPS should beep every 4 seconds.
   3. Reconnect the power cable. Normal mains power operation should be restored.

## START-UP FROM BATTERY

1) With mains not present, press the "ON" button for approx. 1 second (until a beep is heard) and then release. All the display LEDs will light up for 1 second and the UPS will emit a beep. The battery voltage is checked and if all is normal, only the battery operation, the load bar and the battery bar LEDs remain lit, accompanied by an intermittent beep.
2) Switch on the appliances connected to the UPS.

## UPS SHUTDOWN

To switch the UPS off, keep the "OFF" key pressed until a beep is heard, then release the button immediately. All the display LEDs will light up for a few moments, after which, if the input mains is present, the UPS will go into stand-by mode ("Fault/Stand-by" LED flashing), otherwise it will switch off completely.

## ADDITIONAL FUNCTIONS EXECUTED FROM THE FRONT PANEL

***UPS in stand-by operation***

- To **cancel a software programmed shutdown**[(1)] keep the "ON" key pressed down until the **2nd beep** is heard and then release immediately (approx. 5 sec), or keep the "OFF" key pressed down until a **beep** is heard and then release immediately (approx. 2 sec).

***UPS in operation from mains***

- To **silence** the intermittent UPS **alarm** during the final stage of a software programmed shutdown, keep the "ON" key pressed down until the **1st beep** is heard and then release immediately (approx. 2 sec)
- To **cancel a software programmed shutdown**[(1)] keep the "ON" key pressed down until the **2nd beep** is heard and then release immediately (approx. 5 sec).
- To perform a b**attery test,** keep the "ON" key pressed down until the **3rd beep** is heard and then release immediately (approx. 7 sec). At this point the test will start, indicated by the display LEDs flashing cyclically. Once finished, if the batteries are good, the UPS returns to operation from the mains with the usual indications, otherwise, if a battery is faulty or discharged, the "battery fault" LED lights up, which may or may not be accompanied by an acoustic signal (refer to the tables in the ALARMS and SIGNALS section for more details)
- To display the UPS input **mains voltage guideline value** on the "battery level indication" bar, keep the "ON" key pressed down for over 10 sec. (the indication will only appear after the **4th beep**). When the key is released, the normal battery voltage indication will be displayed once again. For more details see *Tab. 2* of paragraph "LED panel indications".

***UPS in operation from battery***

- To **silence** the intermittent UPS **alarm** during operation from battery, keep the "ON" key pressed down until the **1st beep** is heard and then release immediately (approx. 2 sec)
  **N.B. The UPS cannot be silenced when it is in the end of discharge state (1 beep per second)**
- To **cancel a software programmed shutdown**[(1)] keep the "ON" key pressed down until the **2nd beep** is heard and then release immediately (approx. 5 sec).
- To **shut down the UPS in the event of active programmed shutdown**[(1)], press the OFF key (for approx. 5 seconds) until the 2nd beep is heard. During the shutdown phase all the LEDs will light up and the UPS will emit a continuous beep.

(1) For more details on the functions that can be activated via software, consult the software manual on the CD-Rom provided.

## LED INDICATOR PANEL

This chapter gives a detailed description of all LED indicator panel.

| ICON | STATUS | DESCRIPTION |
|---|---|---|
| | Red / Steady | Indicates an fault |
| | Red / Flashing | The UPS is in stand-by mode |
| | Green / Steady | The UPS is operating on mains power |
| | Green / Flashing | ▪ The UPS is operating off the bypass<br>▪ The voltage input is out of the accepted range |
| | Green / Steady | The UPS is operating in battery mode and will beep at regular intervals. |
| | Green / Flashing | When operating off battery power, the UPS signals that it is about to switch off due to end of discharge. In this state, it beeps at regular intervals of 1 sec. |
| | Red / Steady | Indicates battery failure |
| | Yellow / Steady | The loads connected to the UPS are powered by the bypass |
| | Green / Active | Represents the estimated percentage of battery charge by 5 LEDs (see table 1) |
| | | Hold the ON button down for at least 10 seconds to show the input voltage value (see table 2) |
| | Green – Red / Active | Indicates the % of load applied to the UPS in relation to the nominal value. the last icon indicates overload (see table 3) |

| Table 1 | | | | | |
|---|---|---|---|---|---|
| **Battery level** | **Battery LED bar** | | | | |
| | 1 | 2 | 3 | 4 | 5 |
| 0%~20% | ● | | | | |
| 20%~40% | ● | ● | | | |
| 40%~60% | ● | ● | ● | | |
| 60%~80% | ● | ● | ● | ● | |
| 80%~100% | ● | ● | ● | ● | ● |

| Table 2 | | | | | |
|---|---|---|---|---|---|
| **Input Voltage** | **Battery LED bar** | | | | |
| | 1 | 2 | 3 | 4 | 5 |
| 190V~200V | ● | | | | |
| 200V~230V | ● | ● | | | |
| 230V~250V | ● | ● | ● | | |
| 250V~260V | ● | ● | ● | ● | |
| >260V | ● | ● | ● | ● | ● |

| Table 3 | | | | | |
|---|---|---|---|---|---|
| **Load level** | **Load LED bar** | | | | |
| | **25** | **50** | **75** | **100** | ⚠ |
| **0~5%** | | | | | |
| **5~25%** | ● | | | | |
| **25%~50%** | ● | ● | | | |
| **50%~75%** | ● | ● | ● | | |
| **75%~102%** | ● | ● | ● | ● | |
| **>102%** | ● | ● | ● | ● | ● |

- ● **LED on with steady light**
- ♦ **LED with flashing light on (1 flash per second)**

## OVERLOADS ON THE UPS

The following table shows how the UPS reacts when mains and battery overloads occur and indicates the time that the UPS will remain powered.

| OVERLOAD LEVEL | LOAD POWER TIMES (off mains) | LOAD POWER TIME (off battery) |
|---|---|---|
| 102% < Load ≤ 109% | Switches to bypass after 30 min | Shutdown after 30 min (if battery back up time allows) |
| 110% <= Load ≤ 130% | Switches to bypass after 30 sec | Shutdown after 30 sec |
| 130% < Load ≤ 150% | Switches to bypass after 10 sec | Shutdown after 10 sec |
| Load > 150% | Switches to bypass after 0.5 sec | Shutdown after 0.5 sec |
| Short circuit | Immediate shutdown | Immediate shutdown |

After switching over to the bypass due to overloading, the UPS powers the loads off mains power and a continuous alarm will sound. By reducing the load within the 102% threshold, the UPS returns to normal operating mode.

When the overload level is too high, the input thermal protection is activated and the UPS will be completely shutdown.

To restore normal operation, reduce the load so that it is within the 102% threshold and restore thermal protection by pressing the relevant button on the rear of the UPS and then switch on again.
To restore normal operation following failure due to overloading (continuous beep and load not powered), reduce the load so that it falls within the 102% threshold. Hold the OFF button down until the continuous beep stops and then release it. Wait until the UPS is completely shutdown and then switch on again.

## COMMUNICATION PORTS

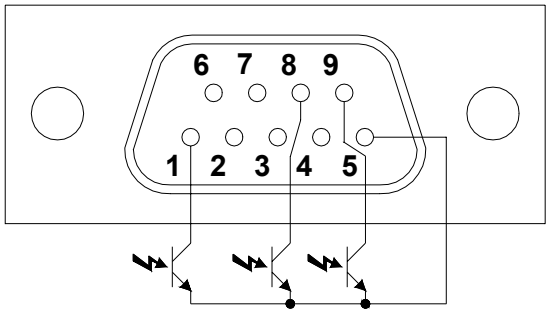
The UPS has the following communication ports (see *UPS views*):

- RS232 serial port
- COMMUNICATION SLOTS: expansion slots for additional interface cards

## RS232 serial port

The RS232 serial port allows the connection of a PC (COM port) by means of a pin-to-pin serial cable (provided[(1)]). This is a plug & play type connection.

**RS232 CONNECTOR**




| PIN No. | SIGNAL |
|---|---|
| 1 | Contact closed: UPS failure/Bypass/Alarm [(2)] |
| 2 | TXD |
| 3 | RXD/SD (remote shutdown) [(3)] |
| 4 | |
| 5 | GND |
| 6 | +12Vdc interface power input |
| 7 | PNP Signal |
| 8 | Contact closed: battery low pre-alarm [(2)] |
| 9 | Contact closed: battery mode [(2)] |

(1) If a different cable is used, it should be of the pin-to-pin type with a max. length of 3 metres.
(2) Optoisolated contact max. +35Vdc / 15mA.
(3) SD: With UPS in operation from battery, the UPS will perform a complete shutdown when +5~15Vdc is applied (between PIN 3 and PIN 5) for at least 20 seconds.

## Communication Slot

All UPS come with an expansion slot for optional communication boards so that the unit is compatible with the main communication standards.

Some examples:

- Serial port duplexer
- Ethernet network agent with TCP/IP, HTTP and SNMP protocols
- RS232 + RS485 port with JBUS / MODBUS protocol

For more details on the options available, visit the manufacturer's web site.

# SOFTWARE

The CD-Rom provided includes two software programmes that allow the user to perform UPS monitoring, control and configuration operations.

## Monitoring and control software

**The** UPSmon **software ensures efficient and intuitive *UPS management*, by displaying all the most important information such as input voltage, applied load, battery capacity, etc.**
It can also automatically execute programmed shutdown/start-up operations, shutdown of the O.S., sending of e-mails, sms and network messages when specific user-selected events occur.

**Installation Operations:**

- Connect the UPS RS232 communication port to a COM port on the PC using the serial cable provided.
- Insert the CD-Rom and select the operating system required.
- Follow the installation instructions. .
- For more detailed information on the installation and use of the software, refer to the software manual in the *Manuals* folder on the CD-Rom provided.

Visit the manufacturer's web site to check whether a more recent version of the software is available.

## Configuration Software

**UPSTools** software allows the user to configure the UPS and provides a full view of the system parameters and status through the RS232 serial port.
Refer to the paragraph ***UPS Configuration*** for a list of the possible configurations available.

**Installation Operations:**

- Connect the UPS RS232 communication port to the COM port on the PC using the serial cable provided.
- Follow the installation instructions given in the software manual in the *UPSTools* folder on the CD-Rom provided.

Visit the manufacturer's web site to check whether a more recent version of the software is available.

## UPS CONFIGURATION

The following table lists all the possible configurations available so as to best adapt the UPS to user requirements. The configuration may be modified only by using the configuration software provided (UPSTools).

| FUNCTION | DESCRIPTION | PREDEFINED | POSSIBLE CONFIGURATIONS |
|---|---|---|---|
| **Automatic Restart** | Automatic restart when mains power returns | Enabled. | • Disabled<br>• Enabled |
| **Battery low alarm** | Remaining battery charge level setting for the battery low alarm | 3 min. | 1 - 99 in steps of 1 minute |
| **Output frequency** | Allows the user to select the output frequency. | 50Hz | • 50Hz<br>• 60Hz<br>• Auto (depending on the UPS input frequency it will operate at 50 or 60 Hz) |
| **Output voltage** | Allows the user to select the output voltage | 230 Vac | • 220 Vac<br>• 230 Vac<br>• 240 Vac |
| **Bypass voltage threshold** | Selects the voltage range accepted for switching over to bypass | Low: 180V<br>High: 264V | Low:180 ÷ 200 in steps of 1V<br>High: 250 ÷ 264 in steps of 1V |
| **Battery capacity** | Allow the user to set the capacity of battery | Standard: 7.2Ah<br>ER: 65Ah | The user must set the capacity of battery if the actual capacity is different from the default value. |

## UPS STATUS REPORTS TABLE

The following table describes the light and audio indicators that appear/sound during normal UPS operation.

| UPS Status | | Load level | | | | | Battery level | | | | | Mains LED | Battery LED | By-pass LED | Battery failure LED | Failure/ Fault LED | Audio Alarm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | | | | | | |
| Standby | | | | | | | | | | | | | | | | ♦ | |
| Bypass | | Load level | | | | | Battery level | | | | | ♦ | | • | | | |
| Line | | Load level | | | | | Battery level | | | | | • | | | | | |
| Battery | Battery normal | Load level | | | | | Battery level | | | | | | • | | | | 1 beep every 4s |
| | Battery low | | | | | | | | | | | | ♦ | | | | 1 beep per sec. |
| Battery test | Test phase | Load level | | | | | Battery level | | | | | ♦ (cyclically) | | | | | |
| | Test over: If the battery < test voltage | | | | | | | | | | | • | | | • | | 6 beeps (2 per second) |
| During countdown of auto restart | Mains normal | | | | | | | | | | | ♦ | | | | ♦ | |
| | Mains abnormal | | | | | | | | | | | | ♦ | | | ♦ | |
| During countdown of shutdown | Line mode | Load level | | | | | Battery level | | | | | • | ♦ | | | | 1 beep every 4s (During the final phase of the shutdown) |
| | Battery mode | | | | | | | | | | | | ♦ | | | | |

- • LED on with steady light
- ♦ LED on with flashing light (1 flash per second)

## UPS FAILURE REPORTS TABLE

The following table describes the light and audio signals that appear/sound to indicate a fault.

| UPS Status | | Load level | | | | | Battery level | | | | | Mains LED | Battery LED | Bypass LED | Battery failure LED | Failure/ Fault LED | Audio Alarm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | | | | | | |
| Mains overload | Alarm phase | | | | | | Battery level | | | | | ● | | | | | 2 beeps per sec. |
| | Switch over to bypass due to overload | ● | ● | ● | ● | ● | | | | | | ♦ | | ● | | ● | continuous beep |
| Battery overload | Alarm phase | ● | ● | ● | ● | ● | Battery level | | | | | | ● | | | | 2 beeps per second |
| | Failure | | | | | | | | | | ● | | | | | ● | continuous beep |
| Capacitor bank voltage fault | | Load level | | | | | | | ● | | | | | | | ● | continuous beep |
| Output short circuit | | Load level | | | | | | ● | | | ● | | | | | ● | continuous beep |
| Inverter fault | | Load level | | | | | | ● | | | | | | | | ● | continuous beep |
| Overheating fault | | Load level | | | | | ● | | | | | | | | | ● | continuous beep |
| Overloaded Battery fault | Bypass | Load level | | | | | ♦ | ♦ | ♦ | ♦ | ♦ | ♦ | | ● | | ● | 4 long beeps at 1-second intervals |
| | Line | | | | | | | | | | | ♦ | | | | ● | |
| | Standby | | | | | | | | | | | | | | | ● | |
| Battery charge fault | Bypass | Load level | | | | | | | | | | ♦ | ♦ | ● | | ● | 1 beep per second |
| | Line | | | | | | | | | | | ● | ♦ | | | ● | |
| | Standby | | | | | | | | | | | | ♦ | | | ● | |
| Fan fault | | Load level | | | | | ● | | | | ● | | | | | ● | 1 beep per second |
| Input Relay fault | | Load level | | | | | | | | ● | | | | | | ● | Continuous beep |

- ● **LED on with steady light**
- ♦ **LED on with flashing light (1 flash per second).**

Very often incorrect UPS operation is not caused by a fault but by common problems, difficulties or carelessness.
The table below gives some useful information to help the user solve the most frequent problems.

| PROBLEM | POSSIBLE CAUSE | SOLUTION |
|---|---|---|
| THE DISPLAY PANEL DOES NOT LIGHT UP | THE POWER CABLE IS NOT CONNECTED | Check that the power cable is connected correctly. |
| | NO MAINS POWER (BLACK-OUT) | Check that there is voltage in the socket to which the UPS is connected (try with a table lamp) |
| | INPUT THERMAL PROTECTION IS ACTIVE | Reset the protection by pressing the button on the rear of the UPS (CIRCUIT BREAKER).<br>N.B.: Check that there is no UPS output overload. |
| THE PANEL IS ON BUT THE LOAD IS NOT POWERED | UPS IN STANDBY MODE | Press the ON button on the front panel to power the loads. |
| | THE LOAD IS NOT CONNECTED | Check the connection to the load. |
| THE UPS IS IN BATTERY MODE EVEN THOUGH MAINS POWER IS AVAILABLE | INPUT THERMAL PROTECTION ACTIVE | Reset the protection by pressing the button on the rear of the UPS (CIRCUIT BREAKER).<br>N.B.: Check that there is no UPS output overload. |
| | THE INPUT VOLTAGE IS OUTSIDE THE ACCEPTED VALUES FOR OPERATION OFF MAINS POWER | Mains power problem. Wait until the input voltage returns to acceptable limits; the UPS will automatically return to mains power mode. |
| A CONTINUOUS BEEP SOUNDS AND THE LOAD INDICATOR IS ALL LIT UP | THE LOAD CONNECTED TO THE UPS IS TOO HIGH | Reduce the load so that it falls within the 102% threshold. |
| "BATTERY FAILURE" APPEARS ON THE DISPLAY | THE BATTERIES MUST BE REPLACED | Contact the Technical Support centre |
| A CONTINUOUS BEEP SOUNDS AND THE LED PANEL SHOWS ONE OF THE INDICATIONS LISTED IN THE "FAULTS TABLE" | A FAULT HAS BEEN FOUND ON ONE OR MORE LOADS POWERED BY THE UPS | Disconnect all the loads and reconnect them one at a time to identify the faulty load. |
| | A MALFUNCTION HAS OCCURRED | If possible disconnect the load, switch the UPS off and on again. If the problem remains, call the Technical Support centre. |

# TECHNICAL SPECIFICATIONS

| *MODELS* | ***700VA*** | ***1000VA*** | ***1000VA XL*** |
|---|---|---|---|

INPUT

| | | | | |
|---|---|---|---|---|
| Nominal voltage | [Vac] | 220 / 230 / 240 | | |
| Transfer Voltage Range | | | | |
| - low line transfer | [load %]<br>[Vac] | Based on load percentage<br>100-80% =160 ± 5<br>80-70% = 140 ± 5<br>70-60%= 120 ± 5<br>60-0%= 110 ± 5 | | |
| -Low line comeback | [Vac] | 170 ± 5 | | |
| -High line transfer | [Vac] | 300 ± 5 | | |
| -High line comeback | [Vac] | 285 ± 5 | | |
| Nominal frequency | [Hz] | 50 / 60 | | |
| Nominal current | [A] | 3.8 | 5 | 6.2 |
| Power factor | | ≥ 0.97 | | |
| Input protection | | 7A thermal breaker | | |

BYPASS

| | | | | |
|---|---|---|---|---|
| Accepted voltage range for switch over | [V ac] | 180 - 264 | | |
| Accepted frequency range for switch over | | Selected frequency ±5 % | | |
| Time taken for switch over | [msec] | Typically: 2 - Maximum: 4 | | |

BATTERY

| | | | | |
|---|---|---|---|---|
| N° batteries / V / Ah | | 2 / 12 / 7 | 3 / 12 / 7 | -- |
| Recharge time | [h] | 4 h to 80% of full charge | | -- |

OUTPUT

| | | | |
|---|---|---|---|
| Nominal voltage | [Vac] | 220 / 230 / 240 | |
| Static variation (4) | | 1.5% | |
| Dynamic variation (5) | | ≤ 5% in 20 msec | |
| Wave form | | Sinusoidal | |
| Voltage distortion @ linear load | | ≤ 3% | |
| Voltage distortion @ distorting load (3) | | ≤ 6% | |
| Frequency (6) | | 50 – 60 Hz ± 0.2Hz | |
| Synchronisation range | | 46-54Hz / 56-64Hz | |
| Current crest factor | | 3 : 1 | |
| Nominal power (3) | [VA] | 700 | 1000 |
| Nominal power | [W] | 490 | 700 |

OTHER VALUES

| | | | | |
|---|---|---|---|---|
| Current leakage to ground | [mA] | ≤ 1.2 | | |
| AC/AC efficiency | | 86% | 88% | |
| Ambient temperature (7) | [°C] | 0 – 40 | | |
| Humidity | | < 90% non condensing | | |
| Protections | | Excessive battery discharge - overcurrent – short circuit – overvoltage - undervoltage - thermal | | |
| Safety certifications | | EN62040-1-1 and EEC 73 / 23, 93/68 specifications | | |
| EMC Compliance | | EN 50091 - 2 cl. B and EEC 89/336, 92/31, 93/68 specifications | | |
| | | | | |
| Noise | | < 45 dB(A) at 1 Mt. | | |
| Dimensions W x D x H | | 19"x 390mm x 2U | | |
| Weight | [Kg] | 13 | 16 | 9 |

| *MODELS* | | ***1500VA*** | ***2200VA*** | ***2200VA XL*** |
|---|---|---|---|---|

INPUT

| | | | | |
|---|---|---|---|---|
| Nominal Voltage | [Vac] | 220 / 230 / 240 | | |
| Transfer Voltage Range | | | | |
| -Low line transfer | [load %]<br>[Vac] | Based on load percentage<br>100-80% =160 ± 5<br>80-70% = 140 ± 5<br>70-60%= 120 ± 5<br>60-0%= 110 ± 5 | | |
| -Low line comeback | [Vac] | 170 ± 5 | | |
| -High line transfer | [Vac] | 300 ± 5 | | |
| -High line comeback | [Vac] | 285 ± 5 | | |
| Nominal frequency | [Hz] | 50 / 60 | | |
| | | | | |
| Nominal current | [A] | 7.2 | 10 | 13.8 |
| Power factor | | ≥ 0.97 | | |
| Input protection | | 10A thermal breaker | 12A thermal breaker | 16A thermal breaker |

BYPASS

| | | | | |
|---|---|---|---|---|
| Accepted voltage range for switch over | [Vac] | 180 – 264 | | |
| Accepted frequency range for switch over | | Selected frequency ±5 % | | |
| Time taken for switch over | [msec] | Typically: 2 - Maximum: 4 | | |

BATTERY

| | | | | |
|---|---|---|---|---|
| N° batteries / V / Ah | | 4 / 12 / 7 | 8 / 12 / 7 | -- |
| Recharge time | [h] | 4 h to 80% of full charge | | -- |

OUTPUT

| | | | |
|---|---|---|---|
| Nominal voltage | [Vac] | 220 / 230 / 240 | |
| Static variation (4) | | 1.5% | |
| Dynamic variation (5) | | ≤ 5% in 20 msec | |
| Wave form | | Sinusoidal | |
| Voltage distortion @ linear load | | ≤ 3% | |
| Voltage distortion @ distorting load (3) | | ≤ 6% | |
| Frequency (6) | | 50 ± 0.2Hz autosense | |
| Synchronisation range | | 46-54Hz | |
| Current crest factor | | 3 : 1 | |
| Nominal power (3) | [VA] | 1500 | 2200 |
| Nominal power | [W] | 1050 | 1540 |

OTHER VALUES

| | | | | |
|---|---|---|---|---|
| Current leakage to ground | [mA] | ≤ 1.2 | | |
| AC/AC efficiency | | 88% | | |
| Ambient temperature (7) | [°C] | 0 – 40 | | |
| Humidity | | < 90% non condensing | | |
| Protections | | Excessive battery discharge - overcurrent – short circuit – overvoltage - undervoltage - thermal | | |
| Safety certifications | | EN62040-1-1 and EEC 73 / 23, 93/68 specifications | | |
| EMC compliance | | EN 50091 - 2 cl. B and EEC 89/336, 92/31, 93/68 specifications | | |
| | | | | |
| Noise | | < 45 dB(A) at 1 Mt. | | |
| Dimensions W x D x H | | 19"x 480mm x 2U | 19"x 480mm x 2+2U | 19"x 480mm x 2U |
| Weight | [Kg] | 21 | 11 + 27 | 13 |

# TECHNICAL SPECIFICATIONS

| *MODELS* | | ***3000VA*** | ***3000VA XL*** |
|---|---|---|---|

INPUT

| | | | |
|---|---|---|---|
| Nominal voltage | [Vac] | 220 / 230 / 240 | |
| Transfer Voltage Range | | | |
| -Low line transfer | [load %]<br>[Vac] | Based on load percentage<br>100-80% =160 ± 5<br>80-70% = 140 ± 5<br>70-60%= 120 ± 5<br>60-0%= 110 ± 5 | |
| -Low line comeback | [Vac] | 170 ± 5 | |
| -High line transfer | [Vac] | 300 ± 5 | |
| -High line comeback | [Vac] | 285 ± 5 | |
| Nominal frequency | [Hz] | 50 / 60 | |
| Nominal current | [A] | 14.4 | 16 |
| Power factor | | ≥ 0.97 | |
| Input protection | | 16A thermal Breaker | |

BYPASS

| | | | |
|---|---|---|---|
| Accepted voltage range for switch over | [Vac] | 180 - 264 | |
| Accepted frequency range for switch over | | Selected frequency ±5 % | |
| Time taken for switch over | [msec] | Typically: 2 - Maximum: 4 | |

BATTERY

| | | | |
|---|---|---|---|
| N° batteries / V / Ah | | 8 / 12 / 7 | -- |
| Recharge time | [h] | 4 h to 80% of full charge | -- |

OUTPUT

| | | | |
|---|---|---|---|
| Nominal voltage | [Vac] | 220 / 230 / 240 | |
| Static variation (4) | | 1.5% | |
| Dynamic variation (5) | | ≤ 5% in 20 ms | |
| Wave form | | Sinusoidal | |
| Voltage distortion at linear load | | ≤ 3% | |
| Voltage distortion at distorting load (3) | | ≤ 6% | |
| Frequency (6) | | 50 ± 0.2Hz autosense | |
| Synchronisation range | | 46-54Hz | |
| Current crest factor | | 3 : 1 | |
| Nominal power (3) | [VA] | 3000 | |
| Nominal power | [W] | 2100 | |

OTHER VALUES

| | | | |
|---|---|---|---|
| Current leakage to ground | [mA] | ≤ 1.2 | |
| AC/AC efficiency | | 88% | |
| Ambient temperature (7) | [°C] | 0 – 40 | |
| Humidity | | < 90% non condensing | |
| Protection | | Excessive discharge of batteries – overcurrent – short circuit – overvoltage – undervoltage – thermal | |
| Safety certifications | | EN 62040-1-1 and EEC 73 / 23, 93/68 specifications | |
| EMC compliance | | EN 50091 - 2 cl. B and EEC 89/336, 92/31, 93/68 specifications | |
| Hold-up time | [msec] | ≥ 40 | |
| Noise | | < 45 dB(A) at 1 Mt. | |
| Dimensions W x D x H | | 19"x 480mm x 2+2U | 19"x 480mm x 2U |
| Weight | [Kg] | 12 + 27 | 14 |

(1) at nominal load, minimum voltage of 164 Vac, battery charging

(2) at nominal load, nominal voltage of 230Vac, battery charging

(3) Second appendix M5 of the EN50091-1-1 specifications

(4) Mains/Battery at load: 0% -100%

(5) at Mains / battery / mains at resistive load: 0% / 100% / 0%

(6) If the mains frequency falls within ± 5% of the selected value, the UPS is synchronised with mains voltage. If the frequency is outside the accepted values or if the UPS is in battery mode, the selected frequency is adopted $\pm$0.1%.

(7) 20 - 25 °C to ensure a longer battery life.